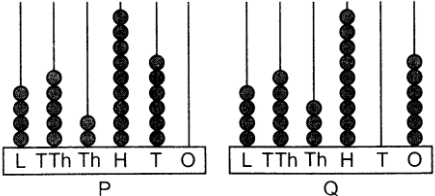# IMO

Number Sense

Do You Know
What topics we will cover in this chapter?

Yes! The topics are:
➢ Numerals and number names
➢ Place value in the Indian and International system
➢ Roman Numbers
➢ Estimation in nearest ten's, hundred's and thousand's
➢ Formation of a number using given information
➢ Expanded form
➢ Ascending-Descending order
➢ Word problems

MATHEMATICAL REASONING

1. What is the numeric form of the number name given below?
"One hundred four thousand, one hundred three"
(a) 1,413
(b) 14,103
(c) 104,103
(d) 104.113

2. The sum of the face values of all the digits of 749205 is _____.
(a) 27
(b) 45
(c) 28
(d) 74

3. Roman numeral for the greatest three digit number is _____.
(a) IXIXIX
(b) CMXCIX
(c) CMIXIX
(d) CMIIC

4. Ninety million ninety thousand ninety is
(a) 9090090
(b) 90090090
(c) 909090
(d) 9090900

5. _____ is equivalent to ten lakh in International System of numeration.
(a) Hundred thousand
(b) Ten million
(c) One million
(d) Ten thousand

6. Select the correct match of Roman numerals in Column i with Hindu-Arabic numerals in Column II.

Column I	Column II
(a) CCXV111	318
(b) DCCLXIX	769
(c) MMMCCXCIX	3399
(d) DCCXLVN	5748

7. In 4, 768, 139 the digit 7 stands for _____
(a) 7 hundred thousands
(b) 7 thousands
(c) 7 ten thousands
(d) 70 lakhs

8. Predecessor of 100, 000, 000 is _____.
(a) 99999999
(b) 9999999
(c) 999999
(d) 999999999

9. Roman numeral for 498 is _____.
(a) CDCXVHI
(b) CDCXIV
(c) CDXCVIII
(d) None of these

10. What will we get if we subtract 1 from smallest 6-digit number?
(a) 99999
(b) 100009
(c) 19999
(d) 999999

11. Hundred lakh = _____.
(a) 10 million
(b) 1 million
(c) 100 million
(d) 10 crore

12. On the basis of the given abacuses, state which of the following options is true?

(a) $P > Q$
(b) $P < Q$
(c) $P = Q$
(d) None of these

13. Which of the following correctly shows 185367249 according to International place value chart?
(a) 1,853,672,49
(b) 18,536,724,9
(c) 185,367,249
(d) 18,53,67,249

14. 43,29,52,280 ☐ 43,29,25,280
(a) >
(b) <
(c) =
(d) None of these

15. The smallest 8-digit number is_____.
(a) 00000001
(b) 10000000
(c) 10000111
(d) 12345678

16. Which of the following options is arranged in descending order?
(a) 7.39,154; 7,93,154; 7,93,541; 7,93.951
(b) 8,50,76.745; 8,50,76,547; 8,50,67,574; 8,50,67,547
(c) 4,76,098; 4,87.678; 76,908; 87.876
(d) 3,15.45,001; 3,51,54,100; 4,15,45,001; 5,25,45,010

17. Place value of 5 in 1,57, 278 is_____.
(a) Million   (b) Fifty thousand
(c) Hundred million (d) Ten thousand

18. Which of the following is greatest?
(a) 4*th* multiple of 52   (b) 8*th* multiple of 37
(c) 5*th* multiple of 25   (d) 7*th* multiple of 50

19. The natural number which is a multiple of *every* number is ___ .
(a) 0
(b) 1
(c) There is no such number
(d) None of these

20. Smallest 6-digit number that can be formed using 9, 2, 6, 0, 3, 1 (using each digit only once) is

_____.
(a) 012369   (b) 102369
(c) 106239   (d) 103269

EVERYDAY MATHEMATICS

21. Ashu is XEX years old. His sister is XXV years old. What is their total age?
(a) XLIV years   (b) XXIV years
(c) XLV years   (d) XLVI years

22. Sumit scored CDLXXXI marks in the annual examination. What is the Hindu Arabic number for this Roman Number?
(a) 500   (b) 432
(c) 482   (d) 453

23. Mohit has five number cards with numbers 7, 9, 0, 5 and 2. Raman asked him to form the greatest 5-digit even number with his cards. Find the number Mohit has to form.
(a) 97520   (b) 97502
(c) 27509   (d) 75902

24. Shikha makes a profit of rupees eighty five crore three iakh fifty five thousand thirty nine- Her profit can be written In numerals as

(a) ₹ 850, 355, 039   (b) ₹ 85, 03. 55, 039
(c) ₹ 85. 03, 55, 390   (d) ₹ 8, 53, 67, 249

25. On some day. Factory A produces 412250 tea bags, factory B produces 334278 tea bags, Factory C produces 424358 tea bags and factory D produces 345896 tea bags. Which factory produces greatest number of tea bags on that day?
(a) Factory A   (b) Factory B
(c) Factory C   (d) Factory D

ACHIEVERS SECTION (HOTS)

26. There are 3 numbers. The first number Is the successor of the second number. The second number is the 3rd multiple of the third number and if the third number is the 8th multiple of 752. Find the first number.
(a) 18047
(b) 18048
(c) 18049
(d) 18050

27. Which of the following statements is INCORRECT?
(a) The place value of the digit '3' in the number is 3000 .
(b) The place value of the digit '6' in the number 6734581 is predecessor of 5999999.
(c) In the number 1876523 , the place value of the digit '1' is 1000000 .
(d) The place value of the digit '5' in the number 7658321 is successor of 49999 .

28. Kanchan is thinking of a 5-digit number The number is a multiple of 5. The ten's place digit is the highest common factor of 16 and 24. The hundred's place digit is the smallest odd number. The ten thousand's place digit is an even prime number. The thousand's place digit is the third multiple of the sum of the ten thousand's place and hundred's place digit. There are only 2 even digits in the number. What number is Kanchan thinking of?
(a) 23180
(b) 23185
(c) 29182
(d) 29185

29. Select the INCORRECT match.
(a) 3249 - MMMCCXLIX
(b) 1667 - MDCLXVIS
(c) 207 -CCXVII
(d) 499 - CDXCIX

30. A number consists of 3 different digits. The one's and hundred's place digits are both divisible by 3. The ten's and one's place digits are both divisible by 2. The hundred's place digit is third multiple of 3. What is the number?
(a) 969
(b) 949
(c) 956
(d) 946

ANSWER KEY				
1. C	**2.** A	**3.** B	**4.** B	**5.** C
6. B	**7.** A	**8.** A	**9.** C	**10.** A
11. A	**12.** B	**13.** C	**14.** A	**15.** B
16. B	**17.** B	**18.** D	**19.** B	**20.** B
21. A	**22.** C	**23.** A	**24.** B	**25.** C
26. C	**27.** B	**28.** D	**29.** C	**30.** D

HINTS & EXPLANATIONS

1. (c) : One hundred four thousand, one hundred three is written as 104,103.

2. (a) : Sum of face values of all the digits of $749205 = 7 + 4 + 9 + 2 + 0 + 5 = 27$

3. (b) : Greatest three digit number is 999.
Now, $999 = 900 + 90 + 9 = $ CMXCIX

4. (b) : Not Available

5. (c) : Not Available

6. (b) : (A) CCXVIII $= 200 + 10 + 8 = 218$
(b) DCCLXJX $= 500 + 200 + 50 + 10 + 9 = 769$
(c) MMMCCXCIX $= 3000 + 200 + 90 + 9 = 299$
(d) DCCXLVII $= 500 + 200 + 40 + 7 = 747$

7. (a): ∴ 7 is at hundred thousands place.

8. (a): Predecessor is one less than the given natural number.

$$100,000,000$$
$$- \quad\quad 1$$
$$\overline{\quad 99999999 \quad}$$

9. (c) : $498 = $ CDXCVIII

10. (a): The smallest 6-digit number is 100000.

$$100000$$
$$- \quad\quad 1$$
$$\overline{\quad 99999 \quad}$$

11. (a) : Not Available

12. (b) : Abacus P shows the number 452960 and abacus Q shows the number 453906
So, $P < Q$

13. (c) : Not Available

14. (a) : $43,29,52,280 > 43.29,25,280$

15. (b) : Smallest 8 - digit number Is 10000000,

16. (b) : $85076745 < 85076547 < 85067574 < 85067547$

17. (b) : Place value of 5 in n 1,57, 278 is fifty thousand-

18. (d) : (A) 4th multiple of $52 = 208$
(b) 8th multiple of $37 = 296$
(c) 5th multiple of $25 = 125$
(d) 7th multiple of $50 = 350$
So. 350 is the greatest value amongst all

19. (b) : Not Available

20. (b) : The smallest 6-digit number that can be formed is 102369.

21. (a) : Age of Ashu = XIX years - 19 years
Age of his sister = XXV years = 25 years
Their total age $= 19 + 25 = 44$ years
$\qquad\qquad\qquad = $ XLIV years

22. (c) : Not Available

23. (a) : According to given information,
The 5-digit number is even.
∴ 5th number will be 0 or 2, which are the only even numbers.
So, the greatest 5-digit even number that can be formed is 97520.

24. (b) : Eighty five crore three lakh fifty five thousand thirty nine is written in numerals as 85,03,55,039.

25. (c) : 424358 is the greatest number among all the numbers.
So, factory C produces greatest number of tea bags.

26. (c) : According to given information, Third number is the 8th multiple of 752
∴ 3rd number = 6016

Second number is the 3rd multiple of the third number.

$\therefore$ Second number $= 3 \times 6016 = 18048$

The first number is the successor of the second number.

So, first number $= 18048 + 1 = 18049$

27. (b) : (A) Place value of 3 in number 27543765 Is 3000.

(b) Place value of 6 in number 6734581 is 6000000 which is predecessor of 6000001.

(c) IN the number 1876523, place value of 1is 1000000.

(d) Place value of 5 in 7658321 is 50000 which is successor of 49999.

28. (d) : The number is multiple of 5. So, one's place digit is either 0 or 5.

Highest common factor of 16 and 24 is 8.

$\therefore$ Ten's place digit of the number is 8. Smallest odd number is 1.

$\therefore$ Hundred's place digit of the number; is 1.

2 is the only even prime number.

$\therefore$ Ten thousand's place digit of the number is 2.

Sum of ten thousand's place and hundred's place digit $= 2 + 1 = 3$

$\therefore$ Thousand's place digit of the number is $3 \times 3 = 9$

Given that, only 2 even digits are there in the number.

$\therefore$ One's place digit of the number should be 5.

So, the required number is 29185.

29. (c) : (A) MMMCCXLIX $= 3000 + 200 + 40 + 9 = 3249$

(b) MDCLXVII $= 1000 + 500 + 100 + 60 + 7 = 1667$

(c) CCXVII $= 200 + 17 = 217$

(d) CDXCIX $= 400 + 90 + 9 = 499$

30. (d) : Third multiple of 3 is 9.

So, hundred's place digit is 9.

Also, one's place digit is divisible by 2 and 3 both. Therefore, one's digit is 6 and ten's place digit is divisible by 2. From given options, the number is 946.